

## Changing trends in clinico-epidemiological profile of lung cancer in patients of South India

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### Abstract

**Background:** Lung cancer remains the commonest cancer among males worldwide. In India, lung cancer constitutes 9.3% of all cancers. Lung cancer incidence and mortality is rising in females and declining in males in developed nations. **Objective:** To understand the changing trends in clinico-epidemiological profile of lung cancer in patients of South India. **Method:** The study includes 82 patients diagnosed with a cytological or histological confirmation of lung cancer at the Department of Respiratory Medicine Aarupadai Veedu Medical College Pondicherry/Dr.SMCSI Medical College Karakonam, India over a period of 3 years from 10-2016 to 10-2019. Data was entered in MS Excel spread sheet. Data analysis was done using SPSS. **Results:** Cough was the most common symptom among the study population. Among the study population, the maximum frequency (n=17%) of ECOG PS 4 of Eastern Cooperative Oncology Group Performance Status (ECOG PS) score. CA right lung was the maximum observation diagnosed among the study population. Post-Histopathological Examination, adenocarcinoma was the maximum observation recorded among the study population. **Conclusion:** There has been no improvement in lung cancer epidemiology. Non-smokers have adenocarcinoma more frequently than the smokers.

**Keywords:** Adenocarcinoma; Non-smokers; ECOG PS; India

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### Introduction

Lung cancer is the most common cancer worldwide representing approximately 12% of all new cancers [1]. It is also the most common type of cancer in males and remains the most common cause of cancer related mortality in both sexes [2]. Most patients present with advanced disease. Of the estimated 1.8 million new cases in 2019 (12.9% of the total), 58% occurred in less developed regions [3]. Lung cancer remains the commonest cancer among males worldwide. In India, lung cancer constitutes 9.3% of all cancers [4]. Lung cancer incidence and mortality is rising in females and declining in males in developed nations. The observed variations in lung cancer rates and trends across countries or between males and females within each country largely reflect differences in the stage and degree of the tobacco epidemic [5]. Adenocarcinoma, squamous cell carcinoma, large cell carcinoma and small cell undifferentiated carcinoma are the common histological types accounting for more than 90% of all lung cancers [6]. In the recent past, a relative increase in the incidence of adenocarcinoma has been witnessed. In most of the developed countries, it has become the dominant histological type of lung cancer [7]. It has also overtaken squamous cell carcinoma as the most common form of lung cancer among males in some countries while it has continued to be the commonest

type among females. This histological shift has been linked to changes in the smoking habits of the population in these regions as well as in the design and composition of cigarettes being marketed therein. The advent of personalized chemotherapy based on histology and molecular expression and relative increase in adenocarcinoma worldwide has generated a renewed interest in epidemiology of lung cancer. Therefore, understanding the burden of lung cancer according to histological type is not only of epidemiological interest but also crucial for treatment decision. The overall incidence of lung cancer is on the rise in India [8]. Therefore, the study aimed to understand the changing trends in clinico-epidemiological profile of lung cancer in patients of South India.

### Method

This retrospective study was conducted in the Department of Respiratory Medicine Aarupadai Veedu Medical College Pondicherry/Dr. SMCSI Medical College Karakonam, India over a period of 3 years from 10-2016 to 10-2019. A total of 82 patients diagnosed with a cytological or histological confirmation of lung cancer were included. Patients with clinico-radiological suspicion of lung cancer but no cytological or histological confirmation were excluded. The study was approved by the institute ethics committee and written informed consent was obtained from the participants.

Patient's demographic data (age, sex, and residence), smoking status, clinical presentation, radiological findings, histological type and stage of cancer were prospectively collected. Parameters like Coughing status, Breathlessness status, fever, Hemoptysis, Weight loss, Chest pain, Hoarseness of voice and dyspnea. Data was collected using the study proforma. Comorbidities for all the

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study population was monitored and recorded. Eastern Cooperative Oncology Group Performance Status (ECOG PS), Imaging and Histopathological Examination (HPE) was also recorded in our study.

**Statistical analysis**

Data was entered in MS Excel spread sheet. Data analysis was done using SPSS. Written informed written consent was taken after informing the participants about the possible benefits, risks and implications of the study. Strict confidentiality of their personal details and information related to the study was maintained at all level.

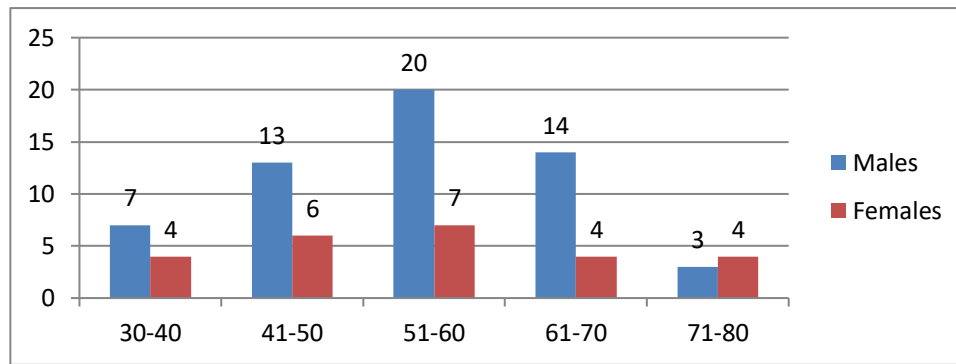
**Results**

This retrospective study was conducted in the Department of Respiratory Medicine Aarupadai Veedu Medical College Pondicherry / Dr. SMCSI Medical College Karakonam, India over a period of 3 years from 10-2016 to 10-2019. In this study, initially a total of 100 patients were found eligible. But, 18 were excluded based on the exclusion criteria and those who didn't want to participate. So, a total of 82 patients who diagnosed with a cytological or histological confirmation of lung cancer in the

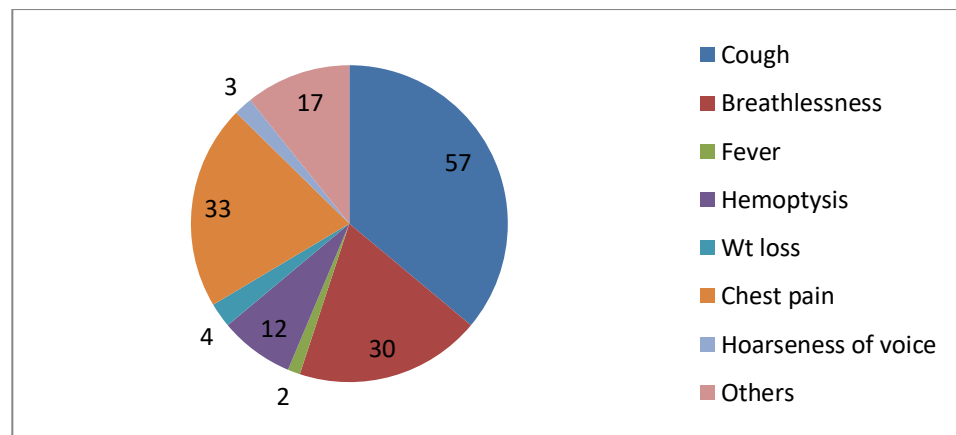
Department of Respiratory Medicine Aarupadai Veedu Medical College Pondicherry/Dr. SMCSI Medical College Karakonam, India over a period of 3 years from 10-2016 to 10-2019 were studied. The following data makes an attempt to summarize the details of observations noted during the study. Of the 82 patients studied, there were 57 males and 25 females. The mean age of the study population was 55.14 years. (Males: 54.85 years and Females: 55.44 years). In both groups, majority of the patients were in the age group of 51-60 years [Figure 1]. The percentages of distribution of symptoms among the study population is shown in Figure 2. Other symptoms are Seizures with right upper limb weakness, right shoulder pain, cold, facial puffiness, weakness of left lower limb, back pain, seizures, facial puffiness, headache, decreased appetite and general weakness. Statuses of habits are maintained in Figure 3. Distribution of Eastern Cooperative Oncology Group Performance Status (ECOG PS) score among the study population is maintained in Figure 4. Diagnosis among the study population is maintained in Figure 5. Histopathological Examination (HPE) among the study population is maintained in figure 6. The examination findings are maintained in Table 1.

**Table 1: Findings of the examination conducted on study patients**

S.No	Findings	N(%)
1	Decreased bs left side	07
2	Decreased bs right side	13
3	Others: (Pallor +, SC Ln palpable, Rs: decreased air entry left side, Rsb/lvbs (04), Rs clear and Rsb/l crests+)	07



**Fig 1: Age and gender distribution of the study population**



**Fig 2: Distribution of symptoms among the study population**

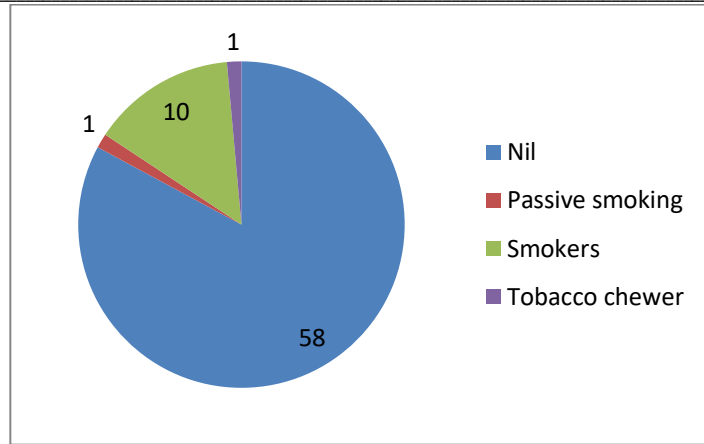


Fig 3: Distribution of habits among the study population

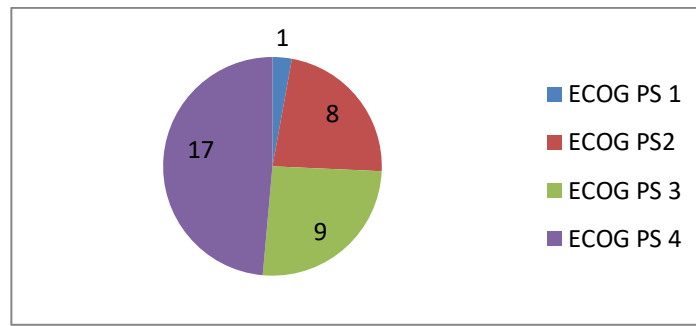


Fig 4: Distribution of Eastern Cooperative Oncology Group Performance Status (ECOG PS) score among the study population.

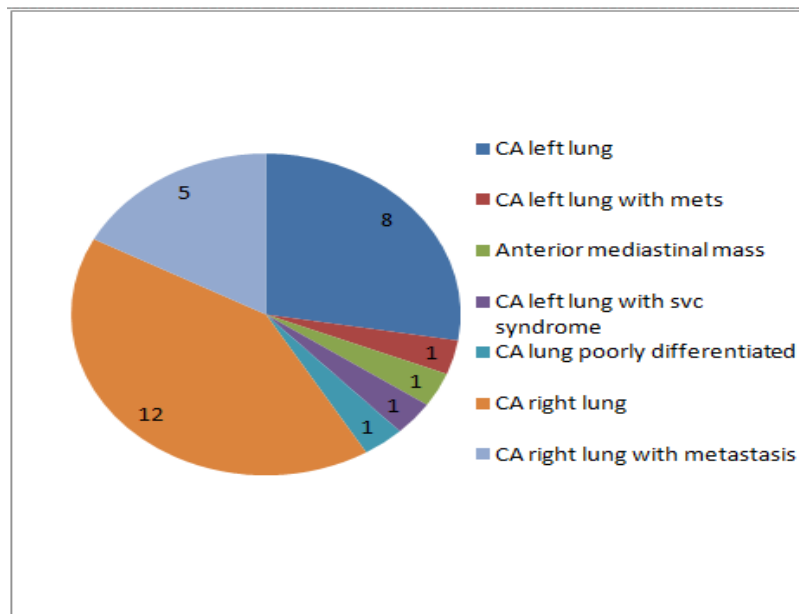


Fig 5: Diagnosis of observations among the study population.

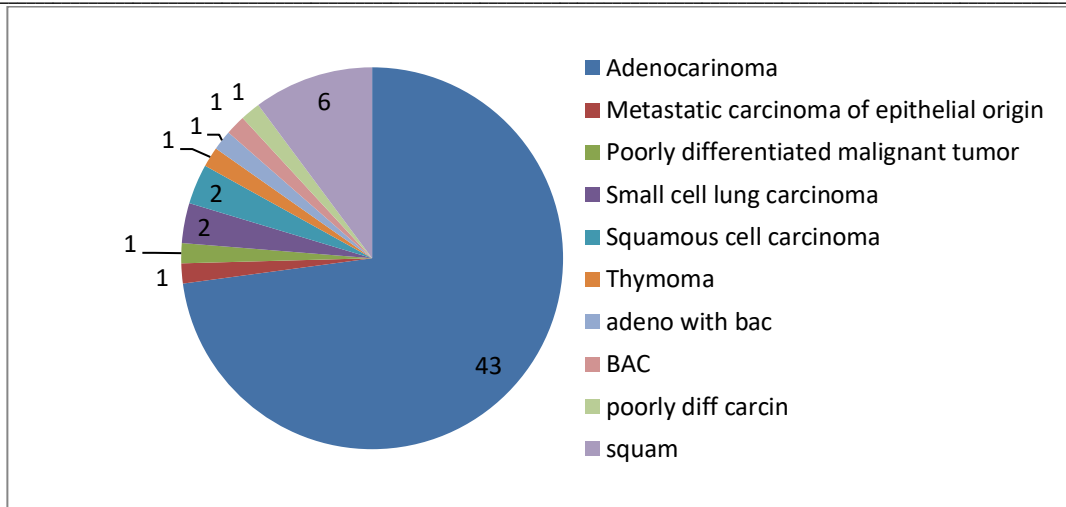


Fig 6: Histopathological Examination (HPE) observations among the study population.

### Discussion

In order to assess the improvement in the epidemiological profile of lung cancer patients presented within the study institute of authors, the current research was carried out. Contrary to the global situation, it was shocking to find that there was no real change in the epidemiology of this epidemic over the course of three years (corresponding to the time period when data was collected). A published collection of population-based morphology-specific lung cancer incidence data from registries belonging to the databases of the International Agency for Research on Cancer (IARC) found that, amid a decline in tobacco usage in many Western countries as well as a change to filtered and low-tar cigarettes, rates of all forms of lung cancer among women and adenocarcinoma among men had increased. The occurrence of squamous cell carcinoma among men in North America and some European countries decreased by 30 percent or more, while the change in other areas was less drastic. Occurrence rates for squamous cells among females showed an improvement in most areas [9]. The existence of discrepancies in the epidemiological characteristics between smokers and non-smokers was one noteworthy finding in the current research. Non-smokers had a lower mean age as well as a higher proportion of female participants, histology of adenocarcinoma, and advanced disease at presentation relative to smokers. As far as gender disparities are concerned, it is well known that smoking is more prevalent among men compared to women in India. The correlation between the incidence of lung cancer and cigarette smoke is greater for squamous cell carcinoma than for adenocarcinoma. In previously published research by the authors on lung cancer risk factors, many other risk factors other than smoking were significant for women, as the smoking correlation was not as high in them as it was for men. Among these, exposure to ambient tobacco smoke (ETS) and indoor air pollution were significant [10-12]. The present research has one drawback. Our research was a hospital-based review of lung cancer epidemiology. When opposed to that obtained from population-based registries, there may be major gaps in data gathered from hospital-based registries. This is because there are many other major sites for data collection in population-based registries (in addition to hospital pathology and departmental records). These sources include the examination of death certificates issued by state or municipal corporations, lists of general physicians, and health care provider records.

### Conclusion

In the context of our study, we conclude that there has been no improvement in lung cancer epidemiology. Overall and among smokers, squamous cell carcinoma remains the most prevalent histological form. As the prevalent histological form, non-smokers have adenocarcinoma more frequently. The findings of this study demonstrate the need for strong tobacco control initiatives to bring about an early improvement in India's epidemiological profile and lung cancer burden.

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**Conflict of Interest: Nil**

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